California Energy Commission

2005 Electricity Environmental Performance Report

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Legislative Direction to Assess Environmental Topics in Integrated Energy Policy Report

- **SB 1389** (Bowen, 2002)
  - 25301(a) Directs the Energy Commission to "develop energy polices that conserve resources and protect the environment…"
  - 25302(a) Directs the Energy Commission to prepare an Integrated Energy Policy Report (IEPR) addressing major energy trends and issues, "including, but not limited to … impacts on … resources and the environment."

2005 Energy Report
Environmental Topics

- Committee Has Directed Staff to Investigate 5 Environmental Topics for 2005 Energy Report
  - Electricity Environmental Performance Report
  - Petroleum Infrastructure Environmental Performance Report
  - Global Climate Change Report
  - Water and Energy Report
  - California / Mexico Border Energy and Environment Report

What is the Electricity Environmental Performance Report?

- Sub-Report to the Commission's Biennial Energy Report to Legislature and Governor
- Systematic, science-based assessment of status and trends in environmental performance for all parts of California's 60,000 MW generation system and the transmission system
- Provides factual basis for environmental policy recommendations related to power generation

What is Environmental Performance?

- Thermal Efficiency
- Environmental Discharges and Resource Uses
  - Quantity of emissions, effluent, waste, water, land, habitat used in power generation
  - Rates of change
  - Pollution controls
- Environmental Quality Effects
- Environmental Efficiency
  - Unit of impact per unit of power

CEC Approach

- State & regional-level discharges & emissions by media and generation sector
  - Total amounts
  - Rates of change from 1996 baseline
  - System “footprint”
- Trends in thermal efficiency
- Technology and regulatory trends
  - SCR, ZLD, 316(b) rule, FERC hydro licensing
- Identify key issues and areas of concern
  - Water use, hydropower impacts, once through cooling effects
- Assessments based on data and analyses conducted by staff, other agencies, academia and stakeholders
- Not a compliance report: assess trends, impacts & issues independently of permit status and CEC jurisdictions

General Conclusions for 2003 EPR

- General trend in improved system performance identified in 2001 EPR is continuing
  - Air emissions trends clearest success
- Significant regional, generation sector and environmental media impacts continue
  - Aquatic habitats impacts from hydro and once though cooling continuing areas of concern
  - Trend in fresh water use for cooling is troubling
  - Biological resource impacts vary by sector
  - Energy crisis did not cause major effects
- Lack of environmental data hinders ability to fully report on environmental performance

Environmental Trade-Offs

- Human health effects v ecological effects v societal preferences v cost
- For example:
  - Hydro: No emissions, low cost, damage fisheries and watersheds
  - Coastal repowering: Low emissions, re-use infrastructure, cooling impacts perpetuated, visual / aesthetics issues
  - Renewables: Very low emissions, impact biological resources
  - Transmission: Link regional energy resources, impact communities and biological resources
  - Imports: Win-Win? Or regional inequities?

2003 Energy Report
Policy Recommendations

- Fresh Water Use for Power Plant Cooling
  - Fresh water to be used only when alternatives are “environmentally undesirable” or “economically unsound”
- Climate Change
  - Report GHG emissions as condition of power plant licensure
  - Account for cost of GHG emissions reductions in procurement
  - Use sustainable designs in all state buildings
  - Require state agencies to incorporate climate change mitigation in planning and policy documents
- Cross Border Issues
  - Conduct Mexico Energy Program to address air-energy issues
- Hydropower Licensing
  - Continue supporting state agencies on hydropower energy-environment issues

Staff's Proposed Workplan for 2005

- Status and Trends Elements
  - Systems level status and trends for power generation and transmission

    For each major sector

Natural gas	Hydro	Renewables
Nuclear	Coal	Transmission

    Assess discharges for each media and community resource

Air	Water	Biological Resources
Waste streams	Land use	Community issues
- Regional and sector assessments
- Profile of out of state imports (20% of electricity used)

Staff's Proposed Workplan for 2005

- Special Focus Topics
  - Environmental Justice
  - Climate Change Effects on Hydro Generation
  - Hydro Energy and Environment
  - Once-Through Cooling
  - Avian Mortality
  - Policy Reviews from 2003 Energy Report
- Environmental Data Requests

Generation Sector Knowledge & Impacts

Sector	MW	Level of Knowledge		Level of Ongoing Impact	
Natural Gas (total)	~35,000	Air	Once Through	Air	Once Through
Comb Cycle	7,000	H	M	L	H
Steam	20,300	H	L	L	H
Cogen	6,600	M	N/A	L	N/A
Peakers / Simple Cycle	2,600	M	N/A	M	N/A
Hydro (includes small hydro)	14,000	WQ	Fish	WQ	Fish
		L	L	H	H
Nuclear	4,200	Waste	Once-Th	Waste	Once-Th
		H	M	M	H
Coal (dedicated out of state)	6,000	Air	Water	Air	Water
		L	L	M	H

Sector	MW	Level of Knowledge		Level of Ongoing Impact	
Renewables					
Wind	1,600	Birds	Land	Birds	Land
		H	M	H	M
Waste to Energy	1,000	Air	Fuel	Air	Fuel
		M	L	M	M
Small Hydro (<30 MW)	1,300	WQ	Fish	WQ	Fish
		L	L	M	M
Solar-Thermal	400	Land	Toxics	Land	Toxics
		H	H	M	L
Geothermal	2,600	Air	Toxics	Air	Toxics
		H	H	L	L
TOTAL	~65,000				

Agenda and Process for Workshop

- For each agenda item
  - Staff presentation
  - Government agency comments
  - Stakeholder comments
- Commissioners may ask clarifying questions
- Speakers should use microphone and state name and affiliation for the record
- Written comments encouraged through Nov 29
- Agenda timeframes are estimates. Will move through agenda as items are completed